

REDUCING GUN VIOLENCE IN AMERICA

**Informing Policy with
Evidence and Analysis**

Edited by

**DANIEL W. WEBSTER
and JON S. VERNICK**

Foreword by

MICHAEL R. BLOOMBERG



Reducing Gun Violence in America

Informing Policy with Evidence and Analysis

EDITED BY

Daniel W. Webster, ScD, MPH,
and Jon S. Vernick, JD, MPH

Center for Gun Policy and Research
Johns Hopkins Bloomberg School of Public Health

The Johns Hopkins University Press
Baltimore

© 2013 The Johns Hopkins University Press

All rights reserved. Published 2013

Printed in the United States of America on acid-free paper

9 8 7 6 5 4 3 2 1

The Johns Hopkins University Press

2715 North Charles Street

Baltimore, Maryland 21218-4363

www.press.jhu.edu

Library of Congress Control Number: 2013930408

A catalog record for this book is available from the British Library.

ISBN 13: 978-1-4214-1110-1 (pbk. : alk. paper)

ISBN 10: 1-4214-1110-5 (pbk. : alk. paper)

ISBN 13: 978-1-4214-1111-8 (electronic)

ISBN 10: 1-4214-1111-3 (electronic)

Special discounts are available for bulk purchases of this book.

*For more information, please contact Special Sales at 410-516-6936 or
specialsales@press.jhu.edu.*

The Johns Hopkins University Press uses environmentally friendly book materials, including recycled text paper that is composed of at least 30 percent post-consumer waste, whenever possible.

Preventing Gun Violence Involving People with Serious Mental Illness

Jeffrey W. Swanson, Allison Gilbert Robertson,
Linda K. Frisman, Michael A. Norko, Hsiu-Ju Lin,
Marvin S. Swartz, and Philip J. Cook

The December 2012 tragedy at Newtown may soon settle in the collective memory of senseless rampages by unstable young men. But in the immediate aftermath, the question of what might have been done to prevent those 28 untimely deaths may galvanize the attention of policymakers desperate to respond. Shall we now hold mental health systems more accountable for failing

Jeffrey W. Swanson, PhD, is a professor in the Department of Psychiatry and Behavioral Sciences at Duke University School of Medicine. Allison Gilbert Robertson, PhD, MPH, is an assistant professor in the Department of Psychiatry and Behavioral Sciences at Duke University School of Medicine. Linda K. Frisman, PhD, is a research professor with the University of Connecticut School of Social Work and a senior research scientist with the Connecticut Department of Mental Health and Addiction Services. Michael A. Norko, MD, MAR, is an associate professor of psychiatry in the Law and Psychiatry Division at Yale University School of Medicine and director of Forensic Services for the Connecticut Department of Mental Health and Addiction Services. Hsiu-Ju Lin, PhD, is an associate research professor in the School of Social Work at the University of Connecticut and the principal data analyst for the Research Division at the Connecticut Department of Mental Health and Addiction Services. Marvin S. Swartz, MD, is a professor and head of the Division of Social and Community Psychiatry and director of Behavioral Health for the Duke University Health System. Philip J. Cook, PhD, is the ITT/Terry Sanford Professor of Public Policy and professor of economics and sociology at Duke University, and he is the codirector of the National Bureau of Economic Research working group on the economics of crime.

to find, treat, or confine people who incline to violence? Should we fault the loose enforcement of federal firearms restrictions, and a loophole-ridden system of background-checks, for failing to keep guns out of the hands of dangerous people? Does the problem lie with the laws themselves, with their blunt and archaic definitions that leave risky people untouched while sweeping up legions of the harmless?

Cogent answers to these questions—and any guidance for the reforms they might imply—must first acknowledge that a multiple-casualty shooting by a disturbed individual is a statistically rare and virtually unpredictable event (Nielssen et al. 2009; Swanson 2011). As such, a singular horrific incident plays an important but ambiguous role in the national conversation on gun violence and in the emergent policy discussion on what to do about it. On the one hand, gun policy scholars hope that the tragedy will focus public consciousness on the pervasive problem of firearms-related injury and mortality. On the other hand, mental health stakeholders and advocates reasonably worry that viewing the public health epidemic of firearm violence through the lens of a massacre of schoolchildren—an act nobody can imagine a sane person committing—is to misplace emphasis on an atypical and presumed psychopathology while ignoring the larger, complex, and more salient causes of a broad societal scourge (Appelbaum and Swanson 2010).

In this essay, we take as a starting place the inherent tension between public safety and civil rights in considering mental illness as a significant concern for firearms policy and law. This means grappling with the full range of social benefits and costs that may accrue in casting a wide net with a broad mesh to find a few dangerous people among the many with largely non-dangerous disorders of thought, mood, and behavior. Whatever the evidence suggests about people with mental illness and violence—and for most there is no linkage—they are often portrayed as dangerous in the mass media and perceived as such by the general public (Pescosolido et al. 1999). Fear stokes avoidance and social rejection, which in turn beget discrimination. And if they are no longer “one of us,” coercion, loss of privacy, and unwarranted deprivation of liberty become easy to justify. Ironically, this alienates people with serious but treatable mental health conditions and encumbers their desire to seek help with worry about what that might entail. A public policy of categorical exclusion based on the presumed dangerousness of one group may serve the public interest but not without overreaching and not without social cost.

We acknowledge that the exigencies of policymaking must sometimes outpace the evidence for what works. But it is also true that crisis-driven law is not always carefully deliberated and that the results can make things worse and be difficult to undo. Prudence, then, makes it crucial that available empirical research contribute as much as possible to the policymaking process, even if the existing research is messy, incomplete, and not wholly generalizable. In that spirit, we present new findings from an empirical study of the effectiveness of federal gun prohibitions in reducing the risk of violent crime in a Connecticut sample of more than 23,000 people with serious mental illness. Using merged administrative records from the state's public mental health and criminal justice systems for the years 2002 through 2009, our quasi-experimental analysis spans the periods before and after Connecticut began reporting mental health records to the National Instant Criminal Background Check System (NICS) in 2007. We consider implications of our research results for possible (and perhaps newly feasible) policy reforms to reduce gun violence.

In 1968, Congress passed the Gun Control Act, which categorically prohibited people from buying firearms if they had ever been involuntarily committed to a mental hospital or "adjudicated as a mental defective" (Simpson 2007). (The latter term is gratuitous and should be amended. It has almost no clinical meaning today, and many mental health stakeholders find the language stigmatizing and offensive.) As defined more specifically in the regulations, the exclusion covers people who have been determined by an authoritative legal process to be dangerous or incompetent to manage their own affairs due to a mental illness. It also covers individuals found incompetent to stand trial or acquitted by reason of insanity.

The legacy of the 1968 Gun Control Act prohibitions remains with us today, long after civil commitment reforms and deinstitutionalization have run their course, radically reducing and reshaping the ranks of the involuntarily committed (Appelbaum 1994; Fisher and Grisso 2010). The categories of exclusion were encoded in federal regulations and retained in the 1994 Brady Violence Prevention Act, which instituted background checks—now increasingly conducted through the NICS—to screen out prohibited persons who may attempt to buy guns from a licensed gun dealer. The mental health prohibitions, in particular, are based on a set of assumptions that may have sounded reasonable 45 years ago, but today invite careful scrutiny in light of voluminous research evidence that has accumulated over the ensuing decades.

The suspect assumptions are these: that serious mental illnesses—of the sort that landed people in mental hospitals against their will—were strongly and causally associated with risk of violent behavior; that people with these dangerous mental health conditions will inevitably come to the attention of psychiatrists, who could then reliably discern the risk of violence and confine the appropriate patients to a mental hospital; that, once discharged, involuntarily treated psychiatric patients will always carry with them some risk of relapse to their dangerous mental health conditions and, thus, should be categorically prohibited from obtaining firearms; and, finally, that the law could effectively deter prohibited individuals from purchasing firearms from a licensed gun dealer—either because they would not try to buy a gun or because they would truthfully disclose their gun-disqualifying mental health histories in the attempt and, thus, be stopped. In order for the logic of the law to work effectively, *all* of these assumptions had to hold true; they were links in a chain of prevention. As it turned out, all of the assumptions were flawed.

Subsequent epidemiological research showed that mental illness contributes little to population violence over all (Fazel and Grann 2006; Swanson 1994; Van Dorn, Volavka, and Johnson 2012). The very small proportion of people with mental illnesses who are inclined to be dangerous often do not seek treatment before they do something harmful; they therefore do not acquire a gun-disqualifying record of mental health adjudication (or a criminal record, either) that would show up in a background check. Psychiatrists, using clinical judgment, cannot accurately foresee which patients will be violent (Lidz, Mulvey, and Gardner 1993) and commit many patients for reasons unrelated to violence risk. States vary widely in commitment criteria and the dangerousness standards that underlie them (Fisher and Grisso 2010). The federal background checks only affect persons who buy guns through a federally licensed gun dealer, while a substantial proportion of firearms transfers are private transactions (Cook and Ludwig 1997). And many people have access to guns in the home, even if they would not legally be able to purchase a gun (North Carolina State Center for Health Statistics 2001).

Some advocates believe the answer to preventing gun rampages by disturbed individuals lies in extending the reach of states' reporting to the NICS (Mayors Against Illegal Guns 2011). Unfortunately, there is no evidence to suggest that merely filling the NICS with more records of people with gun-disqualifying mental health histories would have any measurable impact on reducing firearm violence in the population or, for that matter, on preventing

mass shootings. Indeed, there would seem to be plenty of circumstantial evidence to the contrary. Still, what has been missing is a direct empirical evaluation of the law and policy in a single state, using longitudinal individual-level outcome data that would enable us to compare results for people with serious psychiatric disorders who have been subjected to the law's strictures and exposed to the NICS-reporting policy with those who have not. What follows is a report of the findings of such a study in Connecticut.

Effectiveness of Firearms Prohibitions in Reducing Violence among People with Serious Mental Illness in Connecticut, 2002–2009: Findings from a New Research Study

Connecticut began reporting mental health records to the NICS in early 2007. The Department of Public Safety is responsible for forwarding to the NICS all data regarding gun-prohibited persons. This now occurs by automatic transfer of gun-disqualifying mental health records through a “black box” system, so that confidential psychiatric records are not released to anyone outside of the state mental health authority. The state uploaded 3,062 mental health records to NICS in its first year of reporting, and by 2013 nearly 14,000 records had accumulated in the database. Presumably, the persons whose records were newly made available to the gun background check system had subsequently diminished access to new guns; insofar as they might otherwise have acquired and used guns to commit violent crimes, their risk of committing a violent crime should also have diminished. What has been the impact, if any, in reduced violent crime by gun-disqualified persons with serious mental illness in the state? Our study addressed that question.

Data

Administrative records for adults with serious mental illness spanning 8 years were assembled and merged from Connecticut's public mental health and criminal justice agencies. All research activities involving the use of private health information for this study were reviewed and approved by the relevant jurisdictional Institutional Review Boards (IRBs). Merged records from January 2002 through December 2009 were assembled for 23,292 adults meeting the following criteria: (1) diagnosis of schizophrenia, bipolar disorder, or major depressive disorder and (2) hospitalization in a state psychiatric hospital—either voluntarily or involuntarily—during the study period. Two

study cohorts were constructed for comparison: persons with at least one of the four types of mental health adjudications reported to NICS (involuntary commitment, incompetent to stand trial, insanity acquittals, and conservatorships); and persons with at least one voluntary psychiatric hospitalization but no mental health adjudications. Data were structured in person-month format.

The sample is representative of the population of persons diagnosed with a serious mental illness who use services in the public mental health care system and who either have a history of mental health adjudication or have been hospitalized voluntarily in a state-operated facility for a mental health or co-occurring substance abuse disorder. As such, the sample would not generalize well to the population of all persons in the community who meet criteria for a mental illness or those who have less severe conditions not requiring inpatient treatment or who have private health insurance. The study sample is likely to have more severe and disabling psychiatric conditions, higher rates of substance abuse comorbidity, and a higher proportion who are involved with the criminal justice system. The base rate of violent crime in the sample is much higher than estimates of crime in community samples of persons with mental illness. Records of arrest include all available information but may not have captured lifetime arrests, especially for crime events occurring remotely in the individual's past.

Measures

The primary outcome variable was arrest for any violent crime (firearms-related or otherwise) within a given month. Violent crimes included murder, manslaughter, arson, kidnapping, sexual assault, other assault, robbery, and burglary. Ideally, we would have employed firearms charges as our primary outcome, but only arrests that resulted in conviction were available for analysis. Independent analysis from the Office of Legislative Research in Connecticut has shown that about 92% of firearms violations (e.g., illegal possession, transfer, use of a firearm in a crime, etc.) in the state do not result in convictions, due to plea bargaining and consolidation of charges (Reinhart 2007). Firearms conviction per se is thus an insensitive measure of gun-related crime. Instead, we used violent crime conviction as a proxy for gun use in crime. Violent crime is an important public health and safety outcome—arguably the distal goal of reducing the illegal use of guns—and the two variables are correlated.

Categorical variables were constructed to indicate whether a gun-disqualifying mental health record was present in a given month, whether a criminal disqualifier was in effect (record of felony conviction, misdemeanor

drug crime, or misdemeanor domestic violence offense), and whether the observation month occurred before or after NICS reporting began in Connecticut. Age, sex, race, primary psychiatric diagnosis, and co-occurring substance use diagnoses were included as covariates.

Analysis

We used multivariable categorical regression with repeated measures to estimate effects on violent crime events. The dependent variable was lagged to ensure proper temporal ordering and to avoid confounding the occurrence of gun-disqualifying events with outcome events. We tested the change in risk of violent offending from before to after NICS reporting began. We also tested, in separate regressions not shown, the differences in violent crime risk in people who were disqualified versus not disqualified, for the pre- and post-NICS periods. We controlled for covarying effects of individuals' coincident criminal disqualification and clinical and demographic characteristics as described above. We adjusted the analysis for time at risk by removing observations when individuals were hospitalized or incarcerated. We adjusted for the non-independence of intraperson observations over time.

Results

The mean age of participants was 36 years, and a majority were male (62.5%). The racial-ethnic composition of the sample was 62.7% non-Hispanic white, 18.4% African American, 16.6% Hispanic, and 2.3% other racial-ethnic groups. Regarding primary psychiatric diagnosis, 28.1% had schizophrenia, 30.6% had bipolar disorder, and 41.2% had depression. Across diagnostic groups, 85.9% had a co-occurring alcohol or illicit drug abuse problem at some time during the study period. The prevalence of substance abuse comorbidity is higher in this sample than would be found in a community-representative sample, due in part to the inclusion criterion of hospitalization in a state facility, which would tend to select individuals who have had more complex and severe psychiatric problems.

Table 1 shows the numbers of individuals and proportions of the sample that were disqualified from purchasing a firearm during any time in the study period by type of disqualification. About 40% of the sample was disqualified either for mental health adjudication or a criminal record. Disqualification due to a criminal record was far more common than losing gun rights due to a mental health record (34.9% vs. 7.0%). Of the 1,634 individuals in the study with a

Table 1. Prevalence of gun-disqualifying mental health and criminal records in sample of people with serious mental illness

Type of gun-disqualifying record	N	Percent
Involuntary civil commitment	1,086	(4.7%)
Incompetent to stand trial	464	(2.0%)
Not guilty by reason of insanity	29	(0.1%)
Conservatorship	152	(0.7%)
Any mental health disqualification	1,634	(7.0%)
Criminal disqualification	8,129	(34.9%)
Any criminal or mental health disqualification	9,246	(39.7%)
Both criminal and mental health disqualification	512	(2.2%)
Not disqualified	14,046	(60.3%)

mental health disqualification, 512 (31.3%) were dually disqualified on the basis of a criminal record. The large majority (93.7%) of the participants who were convicted of a gun-disqualifying crime during the study period were never involuntarily committed or otherwise disqualified due to a mental health record.

A substantial proportion of the sample (39.0%) was convicted of a violent crime at some time during the 8-year study period. The proportion of these crimes that involved use of guns is unknown, but 4% of the sample received a conviction specifically on a gun charge, such as illegal possession of a firearm. Table 2 shows the unadjusted frequencies of violent crime events as a proportion of the person-month observations available for analysis, by status of disqualification from firearms, for observations before and after NICS reporting began. In the full sample, there was a small decline in the estimated annualized rate of violent crime associated with NICS reporting in those with a mental health disqualification—from 7.8% to 6.5%, a proportional decline of 17%. In the subgroup of observations without any criminal disqualifications, the corresponding decline was greater—from 6.7% before NICS to 3.2% after NICS, a proportional decline of 53%. These unadjusted results are consistent with a NICS reporting effect, although they do not prove a causal relationship. An appropriate quasi-experimental test of statistical significance requires a robust multivariable analysis.

Table 3 displays the multivariable regression analysis for the full sample. Having a gun-disqualifying criminal record did not reduce the likelihood of

Table 2. Unadjusted frequencies of violent crime by gun-disqualifying mental health status and NICS policy exposure (person-month level of analysis)

	N person-months	Number of violent crime months	Percent of person-months with violent crime	Estimated annualized percent of group with violent crime
FULL SAMPLE ¹				
Gun-disqualifying mental health record and NICS policy exposure				
Legally disqualified, before NICS reporting began	44,345	289	0.65	7.8
Legally disqualified, after NICS reporting began	51,254	278	0.54	6.5
Not legally disqualified, before NICS reporting began	1,314,007	7,066	0.54	6.5
Not legally disqualified, after NICS reporting began	778,678	3,776	0.48	5.8
<i>Total</i>	2,188,284	11,409	0.52	6.3
NOT-CRIMINALLY-DISQUALIFIED SUBSAMPLE ²				
Gun-disqualifying mental health record and NICS policy exposure				
Legally disqualified, before NICS reporting began	34,842	194	0.56	6.7
Legally disqualified, after NICS reporting began	35,248	93	0.26	3.2
Not legally disqualified, before NICS reporting began	1,128,574	5,552	0.49	5.9
Not legally disqualified, after NICS reporting began	537,325	1,753	0.33	3.9
<i>Total</i>	1,735,989	7,592	0.44	5.2

¹ Includes all person-months with community tenure; months spent hospitalized or incarcerated were removed from analysis.

² N=452,292 person-month observations were removed for the subsample analysis due to a gun-disqualifying criminal history.

Table 3. Adjusted odds ratios for monthly violent crime associated with legal restrictions on firearms access for people with serious mental illness in Connecticut from 2002-2009, before and after initiation of state policy of reporting gun-disqualifying mental health records to the National Instant Check System

	Adjusted	95%	
	Odds	Confidence	Statistical
	Ratio	Interval	Significance
Gun-disqualifying criminal record			
No criminal disqualification [reference category]	[1.00]		
Criminal disqualification	1.60	(1.52 - 1.68)	***
Gun-disqualifying mental health record and NICS policy exposure			
Legally disqualified, before NICS reporting began [reference category]	[1.00]		
Legally disqualified, after NICS reporting began	0.92	(0.76 - 1.13)	ns
Not legally disqualified, before NICS reporting began	0.76	(0.65 - 0.88)	***
Not legally disqualified, after NICS reporting began	0.78	(0.67 - 0.91)	***
Primary psychiatric diagnosis			
Major depression [reference category]	[1.00]		
Schizophrenia	0.90	(0.84 - 0.96)	***
Bipolar disorder	1.13	(1.07 - 1.20)	**

Substance abuse

No co-occurring alcohol or illicit drug use disorder [reference category] [1.00]
 Any co-occurring alcohol or illicit drug use disorder 2.93 (2.57 - 3.34) ***

Demographic characteristics

Age in years 0.98 (0.97 - 0.98) ***
 Sex

Female [reference category] [1.00]
 Male 2.00 (1.90 - 2.14) ***

Race/ethnicity
 Non-hispanic white [reference category] [1.00]
 Black 1.77 (1.67 - 1.88) ***
 Hispanic 1.20 (1.11 - 1.26) ***
 Other race/ethnicity 0.41 (0.29 - 0.58) ***

Analytic model specifications: General estimating equations (GEE) logistic regression for repeated measures with a lagged dependent variable, controlling for time and adjusting for non-independence of intra-person observations.
 N=2,187,732 person-months observations

Statistical significance: ns - not significant; ***p<0.001;

future violent crime but rather increased the likelihood of a future violent offense by a factor of 1.6. The odds ratios for violent crime were significantly lower for people with no mental health adjudications, compared with those who were disqualified in the pre-NICS period. Among all those who were disqualified, the odds of violent crime did not significantly decline after NICS reporting began. The model also shows that violent crime was associated with having a substance use disorder, being younger, male, of African American or Hispanic background, and having bipolar disorder versus depression. These tend to be factors associated with crime in the population without mental disorders, assuming that racial-ethnic minority status is functioning here as a proxy indicator of social and economic disadvantage, which we did not measure directly. Bipolar disorder was positively associated with violent crime compared with depression. Schizophrenia was negatively associated with violent crime compared with depression (a finding also reported in the MacArthur Violence Risk Study; Monahan et al. 2001.)

Table 4 shows the same analysis for the sample that was uniquely susceptible to the mental-health-related strictures in the federal law and the corresponding NICS reporting policy in Connecticut, without the potentially confounding effect of criminal history on violent crime recidivism. In this analysis, all of the observations were removed for any person-months in which an individual had a criminal disqualification in effect. This model shows a significant result of reduced violent offending among those with a disqualifying mental health record after NICS reporting began. The likelihood of violent crime was lower by a factor of 0.69 among those disqualified in the post-NICS-reporting period compared with those in the pre-NICS period. Indeed, the likelihood of violent crime in disqualified individuals whose records were reported to NICS was reduced to about the same level as seen in people who had never been disqualified. However, in groups who were never disqualified, the odds ratios for violent crime were approximately the same before and after the NICS policy was implemented—0.65 versus 0.62—suggesting, as would be expected, that NICS reporting did not affect people with no record to report to NICS.

Discussion and Implications for Policy

Considering our study population as a whole, we find little evidence that that Brady Act prohibitions serve to reduce the risk of violent crime. Indeed, having a gun-disqualifying criminal record serves as marker for significantly *in-*

creased risk of committing a future violent crime. To the extent that guns were involved in the commission of these crimes by people who could not legally buy a gun, it is clear that the perpetrators did not need to patronize a federally licensed gun dealer and undergo a background check; other ways, means, and suppliers abound for those willing to exploit them.

However, considering separately the subgroup of people with serious mental illness who do not have criminal records, our data seem to suggest that the Brady Law background checks can have some positive effect, if enforced. In those with a gun-disqualifying mental health record, risk of violent criminal offending declined significantly after Connecticut began reporting gun-disqualifying mental health records to the NICS.

These findings do not prove a causal relationship between the background check system and reduced violent crime. There may be other explanations, for example, that post-2007 improvements in the mental health and criminal justice system specifically affected people with gun-disqualifying mental health adjudications, resulting in improved treatment outcomes and a concomitant lower risk of criminal offending. The study has other limitations. We used violent crime as a proxy measure for gun use in crime. The research was conducted in a single state, and the findings may not generalize well to other states.

We conclude that the existing federal criteria for mental health prohibitions on firearms are far from perfect—they tend to be both overinclusive and underinclusive—but they are indeed correlated with increased risk of violent crime in this study. And here is at least some evidence, from one state, that having a mental health adjudication record archived in the NICS can significantly reduce risk of a first violent crime. Achieving comprehensive state reporting of mental health records to NICS may thus help reduce violent crime that is facilitated by guns and, thus, improve public safety.

However, this measured step will not prevent gun violence by dangerous individuals who today can easily skirt the background check system to obtain a firearm. It does nothing to prevent disqualified persons from using the guns they may already have. And even where it appears to work, the policy can affect only a small proportion of the population of persons with serious mental illness, because the base rate of mental health adjudication in Connecticut (as many states) is very low. Only about 7% of the sample had any disqualifying mental health adjudication, and an even smaller proportion—5%—were uniquely disqualified on the basis of a mental health history without also being

Table 4. Adjusted odds ratios for first violent crime associated with legal restrictions on firearms access for people with serious mental illness in Connecticut from 2002-2009, before and after initiation of state policy of reporting gun-disqualifying mental health records to the National Instant Check System: SUBSAMPLE WITH NO PRE-EXISTING FELONY CONVICTION OR OTHER GUN DISQUALIFYING CRIMINAL RECORD

	Adjusted Odds Ratio	95% Confidence Interval	Statistical Significance
Gun-disqualifying mental health record and NICS policy exposure			
Legally disqualified, before NICS reporting began [reference category]	[1.00]		
Legally disqualified, after NICS reporting began	0.69	(0.57 - 0.82)	***
Not legally disqualified, before NICS reporting began	0.65	(0.54 - 0.79)	**
Not legally disqualified, after NICS reporting began	0.62	(0.46 - 0.83)	***
Primary psychiatric diagnosis			
Major depression [reference category]	[1.00]		
Schizophrenia	0.80	(0.74 - 0.86)	***
Bipolar disorder	1.05	(0.98 - 1.13)	ns
Substance abuse			
No co-occurring alcohol or illicit drug use disorder [reference category]	[1.00]		
Any co-occurring alcohol or illicit drug use disorder	3.08	(2.68 - 3.54)	***

Demographic characteristics

Age in years	0.98	(0.97 - 0.98) ***
Sex		
Female [reference category]	[1.00]	
Male	2.18	(2.04 - 2.34) ***
Race/ethnicity		
Non-hispanic white [reference category]	[1.00]	
Black	1.89	(1.76 - 2.03) ***
Hispanic	1.30	(1.21 - 1.41) ***
Other race/ethnicity	1.26	(0.24 - 0.54) ***

Analytic model specifications: General estimating equations (GEE) logistic regression for repeated measures with a lagged dependent variable, controlling for time and adjusting for non-independence of intra-person observations.

N=1,735,437 person-months observations

Statistical significance: ns - not significant; ** p<0.01; ***p<0.001;

disqualified on the basis of a criminal history. In the non-criminally-disqualified subsample, those with a mental health disqualifier accounted for 3.0% of the sample and 3.4% of the violent crime. In the post-NICS period, they accounted for 6.2% of the sample and 5.0% of the violent crime. In contrast, 96% percent the crimes were committed by individuals who did not have a mental health disqualifier in effect, at least not at the time of the offense. These proportions suggest that background checks to enforce the federal mental health prohibitions—even if they are completely effective—will have a very small impact on overall violent crime in persons with serious mental illness; most of those at risk are unaffected by the law.

Revisions to the outdated federal criteria for mental health prohibitions on guns are needed. Minimum standards should be both *efficient* in prohibiting dangerous people from accessing guns and *fair* in preserving the rights of those who are not dangerous. Ideally, a balancing of safety and rights should inform more practical and less onerous rules for denying firearms rights to persons with mental illness who are dangerous, and the same balancing should inform parallel criteria for timely restoration of rights to persons with the mental illness who are no longer dangerous. Most important, then, changes to the prohibited category standards should focus on individual dangerousness, rather than relying on a presumed correlation between violence risk and membership in a category of persons with a mental health adjudication record, irrespective of its remoteness or the circumstances besides dangerousness that might have required it.

Innovative models of gun disqualification exist at the state level and could provide some guidance, at least in principle, for a more rational federal minimal standard. Indiana's "dangerous persons" law (Parker 2010), for example, is not tied to involuntarily commitment or even necessarily to having a diagnosis of mental illness but rather to a determination of dangerousness. In addition, the law focuses on removing current access to guns rather than merely foreclosing the future purchase of a new gun. The Indiana law allows clinicians or the police to take steps to have firearms removed without a warrant from individuals who are assessed to pose a danger to themselves or others (Parker 2010). Another promising approach worthy of consideration is California's law that allows seizure of guns from individuals with mental illness who are detained for dangerousness in a 72-hour hold, pending a judicial hearing in 14 days (Simpson 2007). The point of the law, in both cases, is to take a public health and safety approach to more accurately identify people

who pose an appreciable risk of harming themselves or others instead of apply a broad categorical exclusion that is both insensitive and nonspecific as a practical index of gun violence risk.

Our study results suggest that, among people with mental illness who have a history of criminal offending and involvement with the justice system, existing law and policy designed to prevent access to firearms through federally licensed gun dealers is likely to be of limited effectiveness. Efforts to prevent gun violence in known criminal offenders with mental illness should also focus on reducing socially determined criminogenic risk factors; improving community-based mental health outcomes; and decreasing criminal recidivism in mentally ill offenders through targeted programs such as mental health courts, jail diversion, and community reintegration services for persons with mental illness who have been incarcerated (Monahan and Steadman 2012; Swanson 2010). Added to those measures, we should surely advocate for a range of population-based, gun-safety reforms that remain possible within constitutional limits.

Finally, a word about what might be considered the “elephant in the room” for a serious discussion of mental illness and firearm mortality: it is not homicide but suicide. When we bring suicide into the picture of gun violence, mental illness legitimately becomes a strong vector of concern; it should become an important component of effective policy to prevent firearm violence. Suicides account for 61% of all firearm fatalities in the United States—19,393 of the 31,672 gun deaths recorded in 2010 (Centers for Disease Control and Prevention 2013). Suicide is the third leading cause of death in Americans aged 15 to 24, perhaps not coincidentally the age group when young people go off to college, join the military, and experience a first episode of major mental illness. The majority of suicide victims had identified mental health problems and a history of some treatment. “How did they get a gun?” is an important question to answer. “Where was the treatment, and why did it fail?” may be even more important.

Depression is the particular psychiatric illness most strongly associated with suicide. Social disadvantage plays a role both in the etiology of depressive illness and disparities in its treatment. Depression is not, however, a disorder that gets most individuals a gun-disqualifying record of involuntarily commitment. In other words, people suffering from the one mental health condition that is most closely and frequently linked to suicidality are unlikely to show up in a gun background check. Even if every state were to report all of its records of mental health adjudications to the NICS, this “gap” would not

close. But reporting to the authorities everyone who makes a suicide threat is probably not a good idea, either; it could merely drive people away from the treatment they need. Arguably, though, better access to evidence-based treatment for depression—particularly for low-income people, the elderly, and the unemployed (not to mention college students and returning veterans)—might prevent more firearm fatalities than would relying solely on improved NICS reporting to keep guns out of the hands of dangerous people.

ACKNOWLEDGMENT

Funding for the research presented in this essay was provided by a grant from the National Science Foundation, with additional support from the Robert Wood Johnson Foundation Program on Public Health Law Research.

REFERENCES

- Appelbaum, Paul. 1994. *Almost a Revolution: Mental Health Law and the Limits of Change*. New York: Oxford University Press.
- Appelbaum, Paul S., and Jeffrey W. Swanson. 2010. "Gun laws and mental illness: How sensible are the current restrictions?" *Psychiatric Services* 61: 652–654.
- Bonnie, Richard J., James S. Reinhard, Phillip Hamilton, and Elizabeth L. McGarvey. 2009. Mental Health System Transformation After The Virginia Tech Tragedy. *Health Affairs* 28: 793–804.
- Centers for Disease Control and Prevention. 2013. Injury Prevention & Control: Data & Statistics Web-based Injury Statistics Query and Reporting System (WISQARSTM). Fatal Injury Data and Nonfatal Injury Data. <http://www.cdc.gov/injury/wisqars/index.html>
- Cook, Philip J., and Jens Ludwig. 1997. "Guns in America: National Survey on Private Ownership and Use of Firearms." National Institute of Justice, Research in Brief, Washington, DC: Department of Justice. <http://www.ncjrs.gov/pdffiles/165476.pdf>
- Fazel, Seena, and Martin Grann. 2006. "The Population Impact of Severe Mental Illness on Violent Crime." *The American Journal of Psychiatry* 163: 1397–1403.
- FBI. 2013. <http://www.fbi.gov/about-us/cjis/nics>
- Fisher, William, and Thomas Grisso. 2010. "Commentary: Civil Commitment Statutes—40 Years of Circumvention." *The Journal of the American Academy of Psychiatry Law* 38(3): 365–368.
- Lidz, Charles W., Edward P. Mulvey, and William Gardner. 1993. "The Accuracy of Predictions of Violence to Others." *The Journal of American Medical Association* 269: 1007–1011.

- Mayors Against Illegal Guns. 2011. "Fatal Gaps: How Missing Records in the Federal Background Check System Put Guns in the Hands of Killers." http://www.mayorsagainstillegalguns.org/downloads/pdf/maig_mimeo_revb.pdf
- Monahan, John, and Henry J. Steadman. 2012. "Extending Violence Reduction Principles to Justice-Involved Persons with Mental Illness." In *Applying Social Science to Reduce Violent Offending*, edited by Joel A. Dvoskin, Jennifer L. Skeem, Raymond W. Novaco, and Kevin S. Douglas, 245–261. New York: Oxford University Press.
- Monahan, John, Henry J. Steadman, Eric Silver, et al. 2001. *Rethinking Risk Assessment: The MacArthur Study of Mental Disorder and Violence*. New York: Oxford University Press.
- Nielssen, Olav, Dominique Bourget, Taina Laajasalo, et al. 2009. "Homicide of Strangers by People with a Psychotic Illness." *Schizophrenia Bulletin* 35: 1012–1021.
- Norko, Michael A., and Victoria M. Dreisbach. 2008. Letter to the Editor. *Journal of the American Academy of Psychiatry and the Law* 36: 269.
- North Carolina State Center for Health Statistics Behavioral Risk Factor Surveillance System. 2001. <http://www.schs.state.nc.us/schs/brfss/2001/us/firearm3.html>
- Parker, George. 2010. "Application of a Firearm Seizure Law Aimed at Dangerous Persons: Outcomes from the First Two Years." *Psychiatric Services* 61: 478–482.
- Pescosolido, Bernice A., John Monahan, and Bruce G. Link, et al. 1999. "The Public's View of the Competence, Dangerousness, and Need for Legal Coercion of Persons with Mental Health Problems." *American Journal of Public Health* 89: 1339–1345.
- Price, M., and D. M. Norris. 2008. "National Instant Criminal Background Check Improvement Act: Implications for Persons with Mental Illness." *Journal of the American Academy of Psychiatry and the Law* 36: 123–130.
- Reinhart, Christopher. 2007. "Case Statistics for Firearms Violations." OLR Research Report, 2007-R-0442, Connecticut Office of Fiscal Analysis Database. <http://worldcat.org/arcviewer/1/CZL/2007/08/02/0000070154/viewer/file1.html26782.75>
- Simpson, Joseph R. 2007. "Bad Risk? An Overview of Laws Prohibiting Possession of Firearms by Individuals with a History of Treatment for Mental Illness." *Journal of the American Academy of Psychiatry and the Law* 35: 330–338.
- Skeem, Jennifer, and John Monahan. 2011. "Current Directions in Violence Risk Assessment." *Current Directions in Psychological Science* 20: 38–42.
- Swanson, Jeffrey W. 1994. "Mental Disorder, Substance Abuse, and Community Violence: An Epidemiological Approach." In *Violence and Mental Disorder*, edited by J. Monahan and H. Steadman, 101–136. Chicago: University of Chicago Press.
- Swanson, Jeffrey W. 2010. "Explaining Rare Acts of Violence: The Limits of Population Research Evidence." *Psychiatric Services* 62: 1369–1371.
- Swanson, Jeffrey W. 2011. "Preventing the Unpredicted: Managing Violence Risk in Mental Health Care." *Psychiatric Services* 59: 191–193.
- Van Dorn, Richard A., Jan Volavka, and Norman Johnson. 2012. "Mental Disorder and Violence: Is There a Relationship beyond Substance Use?" *Social Psychiatry and Psychiatric Epidemiology* 47(3): 487–503.